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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/381,328	12/27/1999	ERICH E. KUNHARDT	226333	3830

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EXAMINER

PATEL, VIP

ART UNIT PAPER NUMBER

2879

DATE MAILED: 10/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/381,328

Applicant(s)
Kunhardt et al

Examiner
Vip Patel

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 24-61 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 24-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

DETAILED ACTION

Claim Objections

Claim 33 is objected to because of the following informalities: In claim 33, line 1, add after "cathode", --in a glow plasma discharge apparatus—to be consistent with the apparatus mentioned in following dependent claims 34-41. Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims 33-41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per claim 33, the phraseology "...an electrode.....the electrodes.....the electrodes..." is confusing. It is not clear to examiner whether Applicant wants to claim just one electrode or more than one electrode.

As per claim 40, the term "...over the other of the electrodes" is not consistent with "an electrode" recited in claim 1 and therefore lacks proper antecedent basis.

Claims 34-39 and 41 are rejected by virtue of their dependencies on the independent claim 33.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA

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1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 24 and 27-32 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 5,872,426. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims substantially disclose the same subject matter except for the electric field as being time-varying. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ time-varying electric field since it was known in the plasma generation art that plasma can be produced by either high temperatures or strong constant or time varying electric fields. Thus, applying time-varying electric field would allow a production of controlled emission of electrons so as to generate a plasma discharge for various applications.

Claims 33 and 36-41 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 8-14 of U.S. Patent No. 5,872,426. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims substantially disclose the same subject matter except for a time-varying electric field applied to the electrode. It would have been obvious to one having ordinary skill in the art at the time the

invention was made to incorporate a time-varying electric field to the electrode since it was known in the plasma generation art that plasma can be produced by either high temperatures or strong constant or time varying electric fields. Thus, applying time-varying electric field would allow a production of controlled emission of electrons so as to generate a plasma discharge for various applications.

With regard to claims 25, 26, 34 and 35, Patent '426 does not explicitly claim the electric field being generated by AC or pulsed DC current. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ AC or pulsed DC current to generate electric field so as to sustain a discharge or provide a steady state discharge, thereby ensuring continuous operations, since it was known in the plasma generation art that RF, AC or pulse DC source can be used to energize free electrons in an attempt to produce glow discharge plasmas.

Claims 50, 53-57 and 42, 45-49 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,005,349. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims substantially disclose the same subject matter except for the step of applying a time-varying electric field between the electrodes. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an applied time-varying electric field between the electrodes since it was known in the plasma generation art that plasma can be produced by either high temperatures or strong constant or time varying electric fields. Thus, applying time-varying electric field would allow a production of

controlled emission of electrons so as to generate a plasma discharge for various applications.

With regard to claims 43, 44, 51 and 52, Patent '349 does not explicitly claim the electric field being generated by AC or pulsed DC current. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ AC or pulsed DC current to generate electric field so as to sustain a discharge or provide a steady state discharge, thereby ensuring continuous operations, since it was known in the plasma generation art that RF, AC or pulse DC source can be used to energize free electrons in an attempt to produce glow discharge plasmas.

Claims 58-61 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 6,005,349. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims substantially disclose the same subject matter except for the step of generating an electric field between the electrodes. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an applied electric field between the electrodes since it was known in the plasma generation art that plasma can be produced by either high temperatures or strong constant or time varying electric fields. Thus, applying constant or time-varying electric field would allow a production of controlled emission of electrons so as to generate a plasma discharge for various applications.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 24-26, 33-35, 4246, 48 and 58-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Roth et al., Patent No. 5,387,842, cited by Applicant.

As per claim 24, Roth discloses in Fig.1 a glow plasma discharge apparatus for generating and maintaining a glow plasma discharge comprising a pair of electrodes 10, a perforated dielectric 14, as recited. Further, Roth discloses a RF power amplifier means 20 generating RF electric fields between the electrodes. Roth does not explicitly disclose the electric field as being time-varying. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate an applied time-varying electric field between the electrodes since it was known in the plasma generation art that plasma can be produced by either high temperatures or strong constant or time varying electric fields. Thus, applying time-varying electric field would allow a production of controlled emission of electrons so as to generate a plasma discharge for various applications.

As per claim 33, Roth discloses the claimed invention substantially as explained above. Further, Roth shows in Fig.1 the perforated dielectric 14 and the electrode 10 attached to tubing 11 which is readable as retaining means.

As per claims 42, 45, 46 and 48, Roth discloses the claimed invention substantially as explained above. Further, Roth discloses a second perforated dielectric 14 (as shown in Fig.1). With regard to the apertures being of micron dimension, It would have been an obvious matter of design choice to utilize micron as the aperture's dimension, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art.

As per claims 25, 26, 34, 35, 43 and 44, Roth discloses the claimed invention substantially as explained above. Roth does not disclose the field being generated by AC current or pulsed DC current. It would have been obvious to one having ordinary skill in the art at the time the invention was made to employ AC or pulsed DC current to generate electric field so as to sustain a discharge or provide a steady state discharge, thereby ensuring continuous operations, since it was known in the plasma generation art that RF, AC or pulse DC source can be used to energize free electrons in an attempt to produce glow discharge plasmas.

As per claims 58-60, Roth discloses in Fig.1 a method and apparatus for generating and maintaining a glow plasma discharge at atmospheric pressure (see Col.1, line 13-15) comprising opposing electrodes 11, a perforated dielectric 14, an electric field generator 20, a second perforated dielectric 14 (as shown), as recited. Roth does not disclose the apertures being of micron dimension. It would have been an obvious matter of design choice to utilize micron as the aperture's dimension, since such a modification would have involved a mere change in the size of a component. A

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change in size is generally recognized as being within the level of ordinary skill in the art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shoulders, Patent No. 5,153,901, "Production and manipulation of charged particles".

Hoag, Patent No. 4,698,551, "Discharge electrode for a gas discharge device".

Roth et al., Patent No. 5,414,324, "One atmosphere, uniform glow discharge plasma".

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ~~Haissa Philogene~~ ^{V.P. PMA} whose telephone number is (703) 305-~~3485~~ ⁴⁸⁴⁶. The examiner can normally be reached on 6:30 A.M.-6:00 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, ~~Don Wong~~ ^{N. PMA} can be reached on (703) 305-~~4856~~ ⁴⁷⁹⁴. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-7722 for regular communications and after Final communications. The fax number for the examiner is (703) 305-3485.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

hp
October 9, 2002

Haissa Philogene
Primary Examiner
A.U. 2821


VIP FATEL
PRIMARY EXAMINER